

REMARKS

The Applicants would like to thank the Examiner for the careful consideration given the present application. The application has been carefully reviewed in light of the Office action, and amended as necessary to more clearly and particularly describe the subject matter which applicants regard as the invention.

In particular, the specification has been amended to include section headings. Also, the independent claim has been replaced (i.e., new independent claim 14). Still further, the dependency of the previously multiple dependent claims has been addressed to remove the improper multiple dependence. Lastly, a new claim 15 has been added. As such, it is respectfully requested that formal objections be withdrawn and that all claims be considered.

Next, turning the rejection of claims in view of the patent to Yoshioka et al., the rejection is respectfully traversed in view of the present amendment and the accompanying remarks.

With regard to the relevant technology, an object is imaged by passing a radiation like X rays therethrough. The radiation has an initial value Φ_0 that is attenuated by the object so that detectors at the other side of the object measure other radiation values Φ_t , which are different according to the various tissues the respective rays crossed. The measured radiation Φ_t is actually the sum of a primary radiation Φ provided by a straight ray linking the source to a respective detector, which corresponds to the amount to be imaged, and of a radiation Φ_d scattered from various points in the objects, which blurs the image and the influence of which should be eliminated.

In Yoshioka patent and the present invention, the undesired influence is eliminated with another series of measurements through an imitation of the object, often called a phantom in the art. The scattered radiation through the object is estimated via measuring the scattered radiation through the imitation.

The scattered radiation can be measured directly by methods like the so-called "beam-stop" method. However, such a method is typically avoided for an object that is living because the direct measurement of the scattered radiation requires a second measurement through the object and an increased irradiation may be adverse to the health of the living being.

Yoshioka is a rather confusing disclosure, but to our best understanding this patent proposes to obtain functions $y = f(x)$ in which y is the scattered radiation and x the total measurement radiation for a particular phantom. A table of such functions is obtained for various phantoms.

The scattered radiation through the object is supposed to be identical to a value y for which x is equal to the total radiation Φ through the object. In other words, when a the function giving Φ_d phantom has been found, $\Phi_{\text{object}} = \Phi_{\text{object}} - \Phi_d$ phantom is computed. Relevant parts in Yoshioka are Col. 4, line 51 to Col. 5, line 12; Col. 9, lines 18-23; and Col 12, line 35 to Col. 13, line 7.

Yoshioka does not compute transposition coefficients K relating the scattered radiation through the object (to the estimated) to the known scattered radiation through the phantoms (or imitations), especially with functions including the initial radiation Φ_o , as it uses only x and y parameters which correspond to Φ and Φ_d . The Yoshioka method involves fewer parameters and appears to be cruder, so that a better correction of the scattered radiation is obtained with the present invention.

Another important difference between the Yoshioka method and the present invention is directed to the phantoms. Yoshioka uses a series of simple phantoms, precisely water; cylinders with different diameters, and typically obtains a curve $y = f(x)$ with one measurement through each phantom (see figures 9, 10, 11 and 12). For the present invention, the phantom is an imitation of the object. In on example, the phantom is typically a bidimensional plate of convenient material and thickness and having a similar surface, so that a table of measurements through the phantom and a table of transposition coefficients corresponding to the table of values measured through the object can be obtained.

As a specific example, attention is directed to the present application. A detector 14 senses a measurement along ray 13 in figure 1. The associated measurement through the imitation 8 and the respective transposition coefficients are obtained for the same ray 13 in figure 2 and they are specific to this ray and the corresponding parts of the object and the imitation. Yoshioka does not appreciate or present this correspondence based on identity of rays for the two series of measurements, disregarding the fact that the proportion of scattered radiation may be received by each detector and may also depend on position. All the rays extend

through the object and the imitation with different directions and along different lengths, so that its results are likely to be less precise.

Hence the amended claims are believed to patentable in view of the Yoshioka patent.

In light of the foregoing, it is respectfully submitted that the present application is in condition for allowance and notice to that effect is hereby requested. If it is determined that the application is not in a condition for allowance, the Examiner is invited to initiate a telephone interview with the undersigned attorney to expedite prosecution of the present application.

If there are any further fees resulting from this communication, please charge such fees to our Deposit Account No. 16-0820, Order No. 36057.

Respectfully submitted,
PEARNE & GORDON LLP



Ronald M. Kachmarik, Reg. No. 34512

1801 East 9th Street
Suite 1200
Cleveland, Ohio 44114-3018
216-579-1700
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